

In the claims:

1. (Currently Amended) A method of digitally canceling interference on a received signal within a satellite payload comprising adaptively canceling interference on the received signal using an interference reference feedback signal acquired downstream from a digital processor.
2. (Original) A method as in claim 1 further comprising subtracting an counter-interference signal from the received signal to form a desired signal.
3. (Previously Presented) A method as in claim 2 further comprising digitally processing said desired signal to generate said feedback interference reference signal.
4. (Previously Presented) A method as in claim 3 further comprising correlating said interference reference feedback signal to said desired signal to generate an error signal.
5. (Original) A method as in claim 4 wherein adaptively canceling interference on the received signal further comprising generating said counter-interference signal based on said error signal to cancel said interference.
6. (Original) A method as in claim 5 wherein adaptively canceling interference further comprises iteratively canceling interference on the received signal until said error signal equals zero.
7. (Original) A method as in claim 1 wherein said adaptively canceling interference further comprises digitally and accurately replicating the interference.
8. (Original) A method as in claim 1 further comprising simultaneously digitally canceling interference on a plurality of received signals.

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9. (Original) A method as in claim 1 further comprising sequentially digitally canceling interference on a plurality of received signals.

10. (Previously Presented) A method of digitally canceling interference on a received signal within a satellite payload comprising:

receiving a communication signal having interference;

converting said communication signal into the received signal;

subtracting a counter-interference signal from the received signal to form a desired signal;

digitally processing said desired signal to form an interference reference feedback signal;

correlating said interference reference feedback signal to said desired signal to generate an error signal; and

adaptively canceling interference on the received signal based on said error signal by generating said counter-interference signal to cancel said interference.

11. (Previously Presented) A satellite communication system comprising:

a first antenna for receiving a communication signal;

an analog-to-digital converter (ADC) electrically coupled to said first antenna, said ADC converting said communication signal to a received signal;

a satellite payload circuit comprising a first input, a second input, and an output, said first input is electrically coupled to said ADC;

said satellite payload circuit digitally processing said received signal to form an interference reference feedback signal; and

a feedback signal path electrically coupling said output to said second input, said feedback signal path transferring said interference reference feedback signal from said output to said second input.

12. (Previously Presented) A system as in claim 11 wherein said satellite payload circuit further comprises:

a subtractor electrically coupled to said ADC, said subtractor subtracting a counter-interference signal from said received signal to form a desired signal;

a digital processor electrically coupled to said subtractor, said digital processor generating said interference reference feedback signal from said desired signal;

a correlator electrically coupled to said subtractor, said correlator comparing said interference reference feedback signal to said desired signal to generate an error signal; and

a controller electrically coupled to said correlator and said subtractor, said controller adaptively canceling interference on said received signal based on said error signal.

13. (Previously Presented) A communication system comprising:

a first antenna for receiving a communication signal;

an analog-to-digital converter (ADC) electrically coupled to said first antenna, said ADC converting said communication signal to a received signal;

a subtractor electrically coupled to said ADC, said subtractor subtracting a counter-interference signal from said received signal to form a desired signal;

a digital processor electrically coupled to said subtractor, said digital processor generating an interference reference feedback signal from said desired signal;

a correlator electrically coupled to said subtractor, said correlator comparing said interference reference feedback signal to said desired signal to generate an error signal; and

a controller electrically coupled to said correlator and said subtractor, said controller adaptively canceling interference on said received signal based on said error signal.

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14. (New) A method of digitally canceling interference on a received signal within a satellite payload comprising adaptively canceling interference on the received signal using an interference reference feedback signal and not using a non-feedback interference signal.